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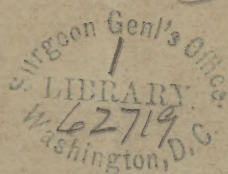
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AN ANALYTICAL REVIEW.

*Presented by
A. E. M. Purdy*

[FROM THE JOURNAL OF PSYCHOLOGICAL MEDICINE, APRIL, 1870.]

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HEREDITARY GENIUS.

[FROM THE JOURNAL OF PSYCHOLOGICAL MEDICINE, APRIL, 1870.]

MONTAIGNE, in one of his most characteristic essays—the one in which he avows his instinctive antipathy to medicine, because its doctrines are more intricate and fantastic than disease itself, and owns his small liking to physicians, who change health into distemper, and more afflict men than do their maladies—writes: “What a wonderful thing it is, that that from which we are produced should carry in itself the impression not only of the bodily form, but even of the thoughts and inclinations of our fathers! And how do they carry on these resemblances with so precipitant and irregular a progress that the grandson shall be like his great-grandfather, the nephew like his uncle?”

In *Macmillan's Magazine* for June and August, 1863, two articles appeared, written by a well-known ethnologist, whose purpose was to quicken an hypothesis which, though often before brought forward, had never found much favor, namely, the hereditary transmission of genius. The question was handled statistically; a vast amount of biographical data was laid under contribution; and the theory was cleverly and ingeniously tried from several points of view. The magazine papers have grown into a volume,¹ where the subject is treated on a greatly-enlarged basis of induction, and after a thoughtful manner, which, if not perfectly satisfying, are at least highly suggestive. The postulate on which Mr. Galton builds his book is:

That man's natural abilities are derived by inheritance, under the same limitations as are the form and physical features of the whole organic world. As, in spite of these limitations, it is easy to get by careful selection a permanent breed of dogs or horses gifted with special powers of running, so it is quite practicable to produce a highly-gifted race of men by judicious marriages during several consecutive gener-

¹ Hereditary Genius; an Inquiry into its Laws and Consequences. By Francis Galton, F. R. S. New York: D. Appleton & Co., 1870. 8vo, pp. 390.

ations. It is held by the supporters of these views that each generation has enormous power over the natural gifts of those that follow, and it is therefore due to humanity to investigate the range of that power, and to exercise it in a way which, without being unwise toward ourselves, shall be most advantageous to future inhabitants of the earth.

The general plan of the argument is, to show that high reputation is a pretty accurate test of high ability; next, to discuss the relationships of a large body of fairly eminent men, and to obtain from these a general survey of the laws of heredity in respect to genius; then to examine in order the kindred of several groups of illustrious men, with relation to their intellectual gifts; and, finally, to collate results, and draw legitimate inferences.

Hence, more than one grade of ability is dealt with. Those men with whom we are most concerned, and on whose kinships the argument is most securely based, have had the general repute of extraordinary genius. But there are so few of these that, although they are scattered throughout the whole historical period of human existence, their number does not amount to more than four hundred, and yet a large proportion of them will be found interrelated.

Another grade of ability includes many highly-eminent men, and all the illustrious names of modern English history, whose immediate descendants are living, and whose relationships may be easily traced.

A third and lower grade includes the English judges from 1660 to 1868, massed together as a whole, for the purpose of prefatory statistical inquiry.

Little notice is taken of modern names of note not English from the difficulty of hunting out the kindred of foreigners, and the risk of error.

In endeavoring to prove that genius is hereditary, by showing how large is the number of instances where men who are more or less illustrious have eminent kinsfolk, there should be: first, a clear idea of the value of the terms "illustrious" and "eminent," and the measure of selection they imply—whether the foremost man in one hundred or one thousand

men, or more; and, second, the degree to which reputation may be accepted as a test of ability.

It is essential, to a right understanding of the terms "eminent" and the like, that a minimum standard should be settled, and the sense in which they are used strictly defined. We should ascertain, too, the proportion that men who have achieved such reputations bear to the whole community. In the scale adopted, an "eminent" man will mean one who has gained a position and reputation, by the common judgment of the leaders of opinion, which are reached by only two hundred and fifty persons in each million of men, or by one person in each four thousand. This will be the narrowest limit of selection, and no name in the list of kinsmen will be introduced that is less distinguished. The term "illustrious" will be still more rigidly applied, including many who are as one in a million, and a few as one in many millions.

The doctrine of the pretensions of natural equality in intellect, which teaches that the sole agencies in creating differences between boy and boy, and man and man, are steady application and moral effort, is daily contradicted by the experiences of the nursery, schools, universities, and professional careers. There is a definite limit to the muscular powers of every man, which he cannot by any training or exertion overpass. It is only the novice gymnast who, noting his rapid daily gain of strength and skill, believes in illimitable development; but he learns in time that his maximum performance becomes a rigidly-determinate quantity. The same is true of the experience of the student in the working of his mental powers. The eager boy at the outset of his career is astonished at his rapid progress; he thinks for awhile that every thing is within his grasp; but he too soon finds his place among his fellows; he can beat such and such of his mates, and run on equal terms with others, while there will be always some whose intellectual and physical feats he cannot approach. The same experience awaits him when he enters a larger field of competition in the battle of life; let him work with all his diligence, he cannot reach his object; let him have opportunities, he cannot profit by them; he tries and is tried, and he finally

learns his gauge—what he can do, and what lies beyond his capacity. He has been taught the hard lesson of his weakness and his strength; he comes to rate himself as the world rates him; and he salves his wounded ambition with the conviction that he is doing all his nature allows him. An evidence of the enormous inequality between the intellectual capacity of men is shown in the prodigious differences in the number of marks obtained by those who gain mathematical honors at the University of Cambridge, England. Of the four hundred or four hundred and fifty students who take their degrees each year, about one hundred succeed in gaining honors in mathematics, and these are ranged in strict order of merit. Forty of them have the title of “wrangler,” and to be even a low wrangler is a creditable thing. The distinction of being the first in this list of honors, or “senior wrangler” of the year, means a great deal more than being the foremost mathematician of four hundred or four hundred and fifty men taken at haphazard. Fully one-half the wranglers have been boys of mark at their schools. The senior wrangler of the year is the chief of these as regards mathematics. The youths start on their three-years’ race fairly, and their run is stimulated by powerful inducements; at the end they are examined rigorously for five and a half hours a day for eight days. The marks are then added up, and the candidates strictly rated in a scale of merit. The precise number of marks got by the senior wrangler, in one of the three years given by Mr. Galton, is 7,634; by the second wrangler, 4,123; and by the lowest man in the list of honors, 237. The senior wrangler, consequently, had nearly twice as many marks as the second, and more than thirty-two times as many as the lowest man. In the other examinations given, the results do not materially differ. The senior wrangler may, therefore, be set down as having thirty-two times the ability of the lowest men on the lists; or, as Mr. Galton puts it, “he would be able to grapple with problems more than thirty-two times as difficult; or, when dealing with subjects of the same difficulty, but intelligible to all, would comprehend them more rapidly in, perhaps, the square-root of that proportion.” But the mathematical powers of the ultimate man on the honors-list, which are so low when compared with those of

the foremost man, are above mediocrity when compared with the gifts of Englishmen generally; for, though the examination places one hundred honor-men above him, it puts no less than three hundred "poll-men" below him. Admitting that two hundred out of the three hundred have refused to work hard enough to earn honors, there will remain one hundred whom, had they done their possible, never could have got them.

The same striking intellectual differences between man and man are found in whatever way ability may be tested, whether in statesmanship, generalship, literature, science, poetry, art. The evidence furnished by Mr. Galton's book goes to show in how small degree eminence in any class of intellectual powers can be considered as due to purely special faculties. It is the result of concentrated efforts made by men widely gifted—of grand human animals; of natures born to achieve greatness.

How far is reputation a fair test of natural ability?—the term natural ability meaning the possession of those qualities of intellect and character which urge and qualify a man to do acts which secure the distinction of eminence among his fellows. According to Mr. Galton, few or no men have won high reputations without being peculiarly gifted with high ability, combined with zeal, together with an adequate power of doing a good deal of very laborious work. Vast intellectual ability without zeal, or zeal without vast intellectual ability, or a combination of both of them without capacity of great work, will profit little. He believes that any one of these three elements, as well as the triple concrete element, are gifts of inheritance. Few who possess these exceptional endowments can fail in winning eminence. It follows that the men who achieve high reputations, and those who are naturally capable, are to a large extent identical, and that a high reputation may be accepted as a fair test of high ability.

I. The Judges of England, since the restoration of the monarchy in 1660, form a group well adapted to give a general outline of the extent and limitations of heredity in respect to genius. A judgeship in England is a guarantee of its possessor having exceptional ability; it is a prize to be won by the

best men at the bar; and the judges are among the foremost of the vast body (3,000) of barristers, who are themselves a selected body. Two hundred and eighty-six judges are included in the inquiry, and 109 of these have one or more eminent relatives. Of the 30 lord-chancellors, 24, or 80 per cent., have highly-gifted kinsmen; while the (280 to 30) 256 other judges can number only (114 to 24) 90, or 36 per cent.

Of the more remarkable cases of relations to the lord-chancellors, there are: 1. Earl Bathurst and his daughter's son, Sir F. Buller; 2. Earl Camden and his father, Chief-Justice Pratt; 3. Earl Clarendon and the remarkable family of Hyde, in which were two uncles and one cousin, all English judges, besides one Welsh judge, and many other men of distinction; 4. Earl Cowper, his brother the judge, and his great-nephew the poet; 5. Earl Eldon and his brother Lord Stowell; 6. Lord Erskine, his eminent legal brother the Lord Advocate of Scotland, and his son the judge; 7. Earl Nottingham and the most remarkable family of Finch; 8, 9, 10. Earl Hardwicke and his son, also a lord-chancellor, and that son's great-uncle, Lord Somers, also lord-chancellor; 11. Lord Herbert, his son a judge, his cousins Lord Herbert of Cherbury, and George the poet and divine; 12. Lord King and his uncle, John Locke, the philosopher; 13. The infamous but able Lord Jeffreys had a cousin just like him, Sir J. Trevor, Master of the Rolls; 14. Lord Guilford, member of a family linked with connections of marvellous ability, and containing thirty first-class men in near kinship, including Montagus, Sydneys, Herberts, Dudleys, and others eminent as judges and statesmen; 15. Lord Truro had two able legal brothers, one of whom was chief justice at the Cape of Good Hope; and a nephew, Lord Penzance, an English judge. Lord Lyttleton, lord keeper of Charles I., may be mentioned too; his father was Chief Justice of North Wales, and his brother Sir Timothy, a judge.

Among the Judges there are nearly as many instances of two or three eminent relations as of one.

The characteristics that distinguish a judge ought to be frequently transmitted to his descendants, for the majority of judges belong to a strongly-marked type; "they are vigorous, shrewd, practical, helpful men, glorying in the rough-and-

tumble of public life, tough in constitution and strong in digestion, valuing what money brings, aiming at position and influence, and desiring to found families." Their vigor is shown by the average age of their appointment, which in the last three reigns has been fifty-seven. Though the labors and responsibilities of their office are enormous, they continue to work with ease for many more years, their average age at death being seventy-five, and they commonly die in harness. Out of the 286 judges, more than *one in every nine* of them has been either father, son, or brother to another judge; and other high legal relationships have been even more numerous. The near relations of the judges are far richer in ability than the more remote; thus in the first degree of kinship the percentage is about 28; in the second, about 7; and in the third, $1\frac{1}{2}$. After three successive dilutions of the blood, the descendants of the judges appear incapable of rising to eminence.

There are some curious facts concerning the natural history of judges. Their parentage, since the accession of George I., is as follows, reckoning in percentages: noble, honorable, or baronet (but not judges), 9; landed gentlemen, 35; judge, barrister, or attorney, 15; bishop or clergyman, 8; medical, 7; merchants and various, unclassified, 10; tradesmen, 7; unknown, 9. It is worth while to note the order in which they stood in their several families, to see whether the eldest was better gifted than the youngest; we find that, in 72 judges, the judge was an only son in 11 cases; eldest in 17; second in 38; third in 22; fourth in 9; fifth in 1; and of a yet later birth in 2.

II. In discussing the relationships of modern English Statesmen, two selections have been made as best worthy of confidence. One is that of the Premiers, begun, for convenience' sake, with the reign of George III.; their number is 25, and the proportion of them who cannot claim to be much more than "eminently" gifted is very small. The other selection is Lord Brougham's "Statesmen of the Reign of George III.," including but 55 names, as comprising the foremost statesmen in that long reign. Of these 11 are judges, and 7 of them have been comprised in the preceding class. The total of the two selections, omitting the judges, is 57. The average natural

ability of these men may be stated as superior to Mr. Galton's class F, which contains 1 in every 4,300 (or 233 in each million of men) endowed with superior intellect, and many of them, as Canning, Fox, the two Pitts, Romilly, the Marquis of Wellesley, and the Duke of Wellington, probably exceed G, or 1 in 79,000 (14 in one million of men). The relationships of some of these families are extraordinary. The kinship of the two Pitts—the Earl of Chatham and his son—is a remarkable instance of high genius being hereditary; but the kinships of the younger Pitt are still more wonderful, from their wide diffusion. He was not only the son of a premier, but nephew of another, George Grenville, and cousin of a third, Lord Grenville; and he besides had the Temple blood. The Fox pedigree is notable in its connection with the Hollands and Napiers. Fox's grandfather was a statesman; his father, created Lord Holland, was Secretary of War; his uncle, the Duke of Richmond, was a cabinet minister; his aunt, sister of the latter, was the mother of the famous Napier family; and his nephew was the well-known Lord Holland of the present century. The Marquis of Wellesley, one of the most eminent statesmen of the age, was a brother of the Duke of Wellington, and had remarkable gifts as a scholar, which descended to his son, the Principal of New Inn Hall, at Oxford. The ability of the second Earl Grey has been intensified in his son, the present earl, one of the best intellects of England, and one of the most unpopular of men and statesmen. George Grenville, the premier (1763), had mixed relationships with the Temple race, the celebrated Earl of Chatham on the one hand, and the Wyndham family on the other. Sir Robert Peel was the son of a cotton-manufacturer of vast ability; one brother was Secretary of War, and another Chief Justice of the Supreme Court of Calcutta. The second Marquis Lansdowne, a statesman and man of letters, and one of the founders of the *Edinburgh Review*, was the son of Earl Shelburne, the supporter of Chatham and the friend of America. Viscount Goderich (Earl of Ripon), premier (1827–28), was a grandson of Charles Yorke, lord-chancellor, and a great-nephew of Lord Hardwicke, another lord-chancellor. Sir Samuel Romilly, one of the most eminent jurists of his time, the reformer of criminal laws

and a statesman, had a son, the present Lord Romilly, who became successively Attorney-General and Master of the Rolls. Sheridan's mother was a very clever woman, who wrote comedies; and among his descendants may be named Mrs. Norton, the poetess, and Lord Dufferin, late Secretary for Ireland. We may mention also the two Disraelis, and the two Earls Derby. The present Bishop of Winchester (better known as Bishop of Oxford), one of the foremost prelates of the English Church and a possible primate, is a son of William Wilberforce, the statesman and philanthropist; and his two brothers are also men of remarkable abilities. Lord Palmerston was of the Temple blood. If we glance over a supplementary list of great statesmen of various periods and countries, we find the two Cecils, father and son; the Guise family, in which there were four generations of notable men; the tribune Mirabeau, who, St. Beuve tells us, combined the paternal qualities with those of his mother, and among whose ancestors, it is said, were to be found men of large mental vigor and character for many generations. The father of the great Cardinal Richelieu was a soldier and diplomatist of mark; and of the descendants of a brother, who had given promise before an early death, may be mentioned the notorious Marshal, and the duke who was chief minister under Louis XVIII. The amusing Comte de Grammont, wit and courtier, was a grand-nephew of the cardinal. In the United States, the transmitted intellectual ability of the Adams family, now in the fourth generation, is very noteworthy.

From Mr. Galton's tables we gather that the ablest statesmen would seem to have the largest number of able relatives; that ability is not distributed at haphazard, but that it affects certain families; and that the statesman's type of ability—high intellectual gifts, tact in dealing with men, power of expression in debate, and capacity to endure exceedingly hard work—is largely hereditary.

It has been truthfully remarked that the families of great men are apt to die out, and that highly-gifted individuals are unprolific. We may stop a moment here to say something about the causes of failure of issue of judges and statesmen; and, as many of the English statesmen are either peers by

inheritance or elevation, and all the chancellors, and some of the other judges, were raised to the peerage, we may extend the inquiry into the influence of British peerages upon race.

Lord Campbell says that when a barrister is elevated to the bench, it is understood that he shall marry his mistress or put her away, and that one-half the judges had so married. Now, this must necessarily interfere with a large average of legitimate children, if we consider the advanced period of life at which they were appointed judges. Let us examine into the descendants of those judges who gained peerages previous to the close of the reign of George IV. There are thirty-one of them; nineteen of the peerages remain, and twelve are extinct. Under what conditions did these twelve become extinct? When we come to learn the particulars of the alliances of the children and grandchildren, we are met by a circumstance which serve as a correct explanation of the common cause of extinction of peerages—a large portion of the sons and grandsons of new peers marry heiresses; and Mr. Galton's statistical lists show, with unmistakable emphasis, that these marriages are peculiarly unprolific, and the title and family are brought to an end. The result of a large array of facts is very striking: 1. Out of thirty-one peerages, there were no less than seventeen in which the hereditary influence of an heiress or coheiress affected the first or second generation; this influence was a sensible agent in producing infecundity in sixteen out of seventeen peerages, and it was sometimes shown in two, three, or more cases in one peerage. 2. The direct male line of no less than eight peerages was actually extinguished through the influence of the heiresses, and six others had very narrow escapes from extinction owing to the same cause. There is but one case, that of Lord Kenyon, where the race-destroying influence of heiress-blood was not felt. 3. Out of twelve peerages that have failed in the direct male line, no less than eight failures are accounted for by heiress-marriages. Now, of the four that remain, two died unmarried; and there are only two out of the ten who married, and whose titles have since become extinct, where the extinction may not be accounted for by heiress-marriages.

A careful analysis of the facts shows that there are no grounds for imputing exceptional sterility to the race of judges.

Turning to the Statesmen of George III., and the premiers since his accession, we find twenty-one, who, treated by the same method as the judges, give fourteen leaving no male descendants; and, of these fourteen, seven of them, or their sons, married heiresses. On the other hand, there are only three cases of peers marrying heiresses without failure of issue. In seven, the male line became extinct from other causes; and, of the remaining five, none were allied to or descended from heiress-blood, and they all left descendants.

The important fact, that intermarriage with heiresses is a positive agent in the extinction of families, is confirmed by more extended inquiries. Mr. Galton examined the extant and the extinct peerages. He first tried the marriages made by the second peers of each extant title. It seemed reasonable to expect that the eldest son of the first peer, the founder of the title, would marry pretty frequently an heiress; and so it proved, and with terrible destruction to their race. One-seventh part of the peerage, leaving out co-heiresses, shows these results: in a total of fourteen cases out of seventy peers, there were eight instances of absolute unproductiveness, and two of only one son. Trying the question from another side, by taking the marriages of the last peers, and comparing the numbers of the children when the mother was an heiress, with those when she was not, we find that among the wives of peers—

100 who are heiresses have 208 sons and 206 daughters;

100 who are not heiresses have 336 sons and 284 daughters.

Every advancement in dignity is a fresh inducement to the introduction of another heiress into the family; dukes have consequently a greater impregnation of heiress-blood than earls; and the fact is, that dukedoms are more frequently extinguished than earldoms, and earldoms are more apt to go than baronies. All the English dukedoms created from the commencement of the order down to the beginning of Charles II. are gone, excepting three merged in royalty, and only eleven earldoms remain out of the many created by the Normans, Plantagenets, and Tudors.—(B. BURKE.)

III.—The list of great Commanders, though small, contains some of the most illustrious names recorded in history. Many who were mere striplings were eminent for political capacity. Their peculiar type of ability would seem to be largely transmitted; there are several notable families of generals. William the Silent had Maurice of Nassau for a son, Turenne for a grandson, and William III. of England for a great-grandson. Another instance of hereditary gifts is shown in the family of Charlemagne: first, Pepin de Heristhal, virtual sovereign of France; then his son, Charles Martel; afterward his grandson, Pepin le Bref, the founder of the Carolingian dynasty; and lastly, his great-grandson, Charlemagne. Alexander the Great had for father Philip of Macedon; Hannibal's father and brothers were celebrated; and the kinships of the Scipios, and of Raleigh, are instances of hereditary special aptitudes. The family of the Napiers, already referred to, and the naval race of Hyde Parker, may also be quoted in support of the argument. Admiral Coligny, the famous Huguenot leader, was the son of Marshal and Constable de Coligny, distinguished in the Italian wars of Charles VIII., Louis XI., and Francis I. Turenne was the son of the Duke de Bouillon, one of the ablest soldiers of Henry IV. of France.

The distribution of ability among the different degrees of kinship of the commanders follows much the same order that it does in the judges and statesmen.

IV.—An analysis of the kinsfolk of literary men proves literary genius to be as fully an inheritance as any of the kinds of ability already discussed. A summary of relationships of fifty-two men of letters, grouped into thirty-three families, shows: twelve with one relation, or two in a family; fourteen with two or three, or three or four in a family; and eleven with four or more, or five or more in a family, gifted with literary talent.

The Rev. Archibald Alison, author of a standard work on Taste, had for sons the historian of Europe, and Dr. William Alison, an eminent Scotch physician; and their uncle was the celebrated Prof. James Gregory, of Edinburgh. The sons of the Rev. Thomas Arnold, of Rugby, have inherited much of the ability of their father. The three Brontë sisters were

highly gifted. Maria Edgeworth's father was a writer, and a man of great mental activity. The son of Hallam, the historian, the subject of Tennyson's "In Memoriam," who died at the age of twenty-three, was already distinguished by the brightness of his genius; a second son gave almost equal promise; and a sister had marked ability; both dying young. John Stuart Mill is the son of an eminent parent. The three sons of Roscoe, the historian and poet, won literary distinction; Madame de Staël was the daughter of the great finance minister of Louis XVI.; and the two sons of Sir James Stephen are clever contributors to periodical literature, whilst his brother was an eminent legal writer. Great hereditary literary ability is shown in the history of the families of the Taylors of Norwich, and of Ongar, and of Sydney. Two sons of Mrs. Trollope, the novelist, have inherited her talents; and the father of Benjamin Disraeli was the well-known author of "The Curiosities of Literature."

V.—The lists of kinsmen of Men of Science, while in a general way confirming the deductions made from the histories of other distinguished men, show an exceptional factor, namely, the unusual power of the maternal influence; and it would appear to be important to success in science, that a man should have an able mother; the fathers of the most famous men in science have frequently had no scientific bent. In eight cases out of forty-three the mother was the abler of the two parents; these were Bacon, Buffon, Condorcet, Cuvier, D'Alembert, Forbes, Gregory, and Watt. Both Brodie and Jussieu had remarkable grandmothers; and the eminent relations of Newton were connected with him by female links. The fathers of Cassini and Gmelin were men of science, and, in a lesser degree, were those of Huyghens, of Napier, of Murchison; but those of Bacon, Boyle, De Candolle, Galileo, and Leibnitz, were either statesmen or literary men. There was a good deal of talent in the families of Bacon, Arago, Bernoulli, Boyle, Darwin, Franklin, Herschel, Hunter, the Gregorys, etc. George Stephenson's son was Robert, the foremost engineer of his day. Sir John Herschel's father was the renowned astronomer, and president of the Royal Society, who came to England with the band of the Hanoverian Guards. The num-

ber of individuals in the Darwin family who have followed some branch of natural history is remarkable. Sir Benjamin Brodie says of his grandfather: "He had the reputation of being a person of very considerable abilities," and of his father, that "he was altogether remarkable for his talents and acquirements;" his elder brother was a lawyer, and gained "the highest place in his profession as a conveyancing barrister." The family of Napier, the inventor of logarithms, was exceedingly able.

VI.—If we except the kindred of Coleridge and Wordsworth, those relations of the Poets who have shown various kinds of ability have been almost all in the first degree. Poets are clearly not founders of families. Fontenelle, the celebrated secretary of the French Academy for nearly forty years, was the nephew of Corneille, whose brother Thomas was also a dramatic poet. Goethe's mother was a remarkable woman, and is spoken of as one of the pleasantest figures in German literature. Dean Milman was the son of an eminent London physician; Tasso's mother was a gifted woman.

VII.—The fact of the inheritance of musical taste and talent is undoubted; but it is difficult to ascertain its distribution among families. About one in five among celebrated musicians appears to have had eminent kinsmen. Sebastian Bach, Haydn, Mendelssohn, and Mozart, are instances of hereditary genius.

VIII.—Artistic eminence is, in some degree, hereditary, and many modern names might be quoted to show that it is frequently shared by kinsmen, and among them the Landseer and Bonheur families. In taking forty-two illustrious painters—old masters—especially of Italy and the Low Countries, whose natural gifts are unquestionably more than eminent, we find about one-half of them with eminent relations. The rareness with which artistic talent passes through more than two degrees of kinship is as noticeable as in the cases of musicians and poets.

IX.—A suitable selection of Divines for the prosecution of an inquiry into the transmissibility of ancestral piety is not easy. The names contained in Middleton's "*Biographia Evangelica*" have been chosen. There are one hundred and

ninety-six Evangelical worthies, taken from the whole of Europe, and who, with the exception of the first four—Wickliffe, Huss, Jerome of Pragne, and John of Wesalia—died between 1527 and 1785, a period of two hundred and fifty-eight years. Of these, twenty-two were martyrs, mostly by fire; others, including many of the martyrs, were active leaders in the Reformation; some were eminent administrators; a few were thorough-going Puritans; a larger number were men of an extreme but pleasing form of piety, as Bunyan, Baxter, Watts, etc.; the rest, and the majority of the whole list, may be described as pious scholars. As a general rule, the men in Middleton's selection had considerable intellectual capacity and natural eagerness for study, both of which qualities were commonly manifested in boyhood. Most of them wrote voluminously.

The summary of the results concerning the divines may be stated thus: They are not founders of families who have exercised a notable influence in history, whether derived from the abilities, wealth, or social position of any of their members. They are a moderately-prolific race, rather under than above the medium. Their average age at death is a trifle less than that of the eminent men comprised in the other groups. They commonly suffer from overwork, and have usually wretched constitutions: those whose constitutions are vigorous, were mostly wild in their youth; and, conversely, most of those who had been wild in their youth and did not become pious till later in life, were men of vigorous constitutions. A pious disposition is decidedly hereditary. And the children of very religious parents occasionally turn out very badly. In connection with this latter proposition, Mr. Galton attempts to show that the chief peculiarity in the moral nature of the pious man is its conscious instability. He is liable to extremes—now swinging forward into enthusiasm, adoration, and self-sacrifice; now backward into sensuality and selfishness. The amplitude of the moral oscillations of religious men is greater than that of others whose average moral position is the same. These views, he thinks, will explain why their offspring are often unworthy. The parents are naturally gifted with high moral characters, combined with instability of disposition; but these peculiari-

ties are in no way correlated. It must, therefore, often happen that the child will inherit the one and not the other. If his heritage consist of the moral gifts without great instability, he will not feel the need of extreme piety; if he inherits great instability without morality, he will be very likely to disgrace his name.

We will now bring the results of Mr. Galton's inquiries side by side for the purpose of comparison, and to ascertain how far they are self-supporting, and in what degree they establish the fact of a decided law of distribution of genius in families. He has dealt statistically with a large body of examples, and included no less than three hundred families, containing between them nearly one thousand eminent men, of whom four hundred and fifteen are illustrious. In comparing the results obtained from the different groups of celebrated men, it will be convenient to compare the columns in the several tables, giving the number of kinsmen in various degrees, which are constructed in the supposition that the number of families in the group is one hundred, which gives therefore a common measure—all percentages—and admits of direct intercomparison. (See table, p. ~~418~~.)

The general uniformity in the distribution of ability among the kinsmen in the several groups is strikingly manifest. The eminent sons are almost invariably more numerous than the eminent brothers, and these are a trifle more numerous than the eminent fathers. On proceeding further down the table, we come to a sudden dropping off of the numbers at the second grade of kinship, namely, at the grandfathers, uncles, nephews, and grandsons. On reaching the third grade of kinship, another abrupt dropping off is again met with, but the first-cousins are found to occupy a decidedly better position than other relations within the third grade.

In contrasting the columns of the different groups, some variations may be noted. The number of the sons of commanders is small. It should be remembered that these mostly began their active careers in youth, and that they were separated from their wives for long periods; and that with others there are exceptional circumstances which hindered them from having issue. The number of their eminent grandsons will be

17/

| Number of families, each containing more than one eminent man... | SEPARATE GROUPS. | | | | | | | | ALL GROUPS TOGETHER. | | |
|---|------------------|-----------------------|------------------------|----------------------|------------------------|----------------|------------------------------|---------------------|---|-----|----|
| | 85 | 39 | 27 | 33 | 43 | 20 | 28 | 25 | 300 | | |
| Total number of eminent men in all the families.. | 262 | 130 | 89 | 119 | 148 | 57 | 97 | 75 | 977 | | |
| | Judges, p. 61. | Statesmen, p. 103. | Commanders, p. 148. | Literary, p. 171. | Scientific, p. 195. | Poets, p. 227. | Artists, pp. 238 and 249. | Divines, p. 255. | Illustrious and eminent men of all classes. | | |
| | B. | B. | B. | B. | B. | B. | B. | B. | B. | C. | D. |
| Father..... | 26 | 33 | 47 | 48 | 26 | 20 | 32 | 28 | 31 | 100 | 31 |
| Brother | 35 | 39 | 50 | 42 | 47 | 40 | 50 | 36 | 41 | 150 | 27 |
| Son..... | 36 | 49 | 31 | 51 | 60 | 45 | 89 | 40 | 48 | 100 | 48 |
| Grandfather..... | 15 | 28 | 16 | 24 | 14 | 5 | 7 | 20 | 17 | 200 | 8 |
| Uncle..... | 18 | 18 | 8 | 24 | 16 | 5 | 14 | 40 | 18 | 400 | 5 |
| Nephew | 19 | 18 | 35 | 24 | 23 | 50 | 18 | 4 | 22 | 400 | 5 |
| Grandson..... | 19 | 10 | 12 | 9 | 14 | 5 | 18 | 16 | 14 | 200 | 7 |
| Great-grandfather ... | 2 | 8 | 8 | 3 | .. | .. | .. | 4 | 3 | 400 | 1 |
| Great-uncle | 4 | 5 | 8 | 6 | 5 | 5 | 7 | 4 | 5 | 800 | 1 |
| First cousin | 11 | 21 | 20 | 18 | 16 | .. | 1 | 8 | 13 | 800 | 2 |
| Great-nephew | 17 | 5 | 8 | 6 | 16 | 10 | .. | .. | 10 | 800 | 1 |
| Great-grandson | 6 | .. | .. | 3 | 7 | .. | .. | .. | 3 | 400 | 1 |
| All more remote | 14 | 37 | 44 | 15 | 23 | 5 | 18 | 16 | 31 | ? | .. |

found as great as in the other groups. Another exceptional entry in the table is, the number of eminent fathers of the great scientific men as compared with that of their sons, there being only twenty-six of the former to sixty of the latter, whereas the average of all the groups gives thirty-one and forty-eight. The attempt is made to show that scientific men owe much to the training and to the blood of their mothers, and that the first in a family who has scientific gifts is not so likely to achieve eminence as the descendant who follows science as a profession. There are few distinguished fathers among the poets. The number of the eminent sons of the artists is enormous and disproportionate, being eighty-nine in only twenty-eight families, whereas the average of all the groups is only forty-eight. This testifies to the strongly hereditary character of their peculiar ability. What has been said

of the greater chance of the descendant of a great scientific man becoming celebrated in science, applies also to the artist.

The final and most important result to be worked out is this: If we know nothing else about a person than that he is a father, brother, son, grandson, or other relation of an illustrious man, what is the chance that he is or will be eminent? In combining the data given, we find the general result to be, that exactly one-half of the illustrious men have one or more eminent relations; lord-chancellors, 24 in 30; statesmen of George III., 33 in 53; premiers, not included in the "statesmen," 8 in 16; commanders, 32 in 59; literary men, 37 in 56; scientific men, 65 in 83; poets, 40 in 100; musicians, 26 in 100; painters, 18 in 42; divines, 33 in 196; scholars, 14 in 36. These proportions reduced to decimals are .8, .6, and .5, .5, .7, .8, .4, .3, .4, .2, .4; giving a general average of .5 or one-half.

In contrasting the power of the male and female lines of kinship in the transmission of ability, the difference against the female is very marked.

| | JUDGES. | STATESMEN. | COMMANDERS. | LITERARY. | SCIENTIFIC. | POETS. | ARTISTS. | DIVINES. | TOTAL. |
|--------------------------|---------|------------|-------------|-----------|-------------|--------|----------|----------|--------|
| Total of Male Lines..... | 74 | 64 | 68 | 74 | 71 | 94 | 85 | 27 | 70 |
| Total by Female..... | 26 | 36 | 32 | 26 | 29 | 6 | 15 | 73 | 30 |
| Male and Female | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

There is a common opinion that great men have remarkable mothers, but statistics show that popular belief ascribes an undue share to maternal influences.

An interesting question yet unsolved is, whether, and how far, men and women who are prodigies of genius, are infertile? There are many difficulties in the way of arriving at a right judgment of the matter; and as yet no trustworthy data have been given to warrant an expression of opinion.

Another prevalent notion is, that men of genius are physically weak and unhealthy—all brain and no muscle. There is no evidence to support this belief. University facts would

show that second and third rate students are apt to be weakly, but that first wranglers and high classics have as much muscle as brain. Mr. Galton's investigations of the law of mortality of his different groups lead him to conclude that, among gifted men, there is a small class who have weak and excitable constitutions, but that the remainder are men likely to enjoy a vigorous old age.

We have endeavored to present a clear summary of Mr. Galton's data, reasonings, and conclusions, in his attempt to establish the theory that high intellectual endowments come by inheritance. His volume is an able contribution to the Darwinian doctrine of Natural Selection. It is brightly and attractively written, and there is a good deal of vigor in the argument. Facts are hunted down with diligence, and ingeniously, and, in the main, fairly used. The author is thoroughly in earnest in his belief, and as thoroughly honest in his treatment; if he is not always convincing, it is more owing to the inherent difficulties which beset the subject, than from any lack of research, zeal, or talent, on the part of the advocate. A larger induction is necessary before any final decision can be had on the merits of the question. A mine has been opened whose further digging may prove very profitable.

Y
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